Building Consistency Meeting Minutes – 3.1.17 RESIDENTIAL

Public Attendance (Contractors, Architects, Engineers): 12

MCCE Staff Attendance: 29

Overview of Today's Agenda

- Today's agenda items: 1 recap, 14 new.
- Today's training topic – Residential Deck Construction.

Welcome, Housekeeping, & Customer Service

- Mecklenburg County Code Enforcement is abbreviated as MCCE throughout the minutes.
- Consistency meetings in all trades have adopted a 4-hour format with 2-hours for consistency items and 2-hours allotted for ISO & CE. With regard to staff ISO hours, these meetings & trainings are able to be counted as Technical or Mentoring ISO time if one chooses, but any portion of time counted as one ISO category could not also be counted as any other category. Trade consistency meetings are scheduled monthly as follows:
    - Building Consistency (Comm) – 1st Tuesday of every month @ 8am.
    - Building Consistency (Res) – 1st Wednesday of every month @ 8am.
    - Electrical Consistency – 2nd Wednesday of every month @ 8am.
    - Mechanical Consistency – last Tuesday of every month @ 8am.
    - Plumbing Consistency – last Wednesday of every month @ 8am.
- Reminder of deadline established for topic/question submissions to building consistency team:
    - Third Wednesday of every month.
    - Deadline set to allow team time to research/explain code logic behind decisions.
    - Submit by email to Jeff Vernon, Bldg Code Administrator jeff.vernon@mecklenburgcountync.gov
    - Submit online: http://charmeck.org/mecklenburg/county/LUESA/CodeEnforcement/Tools/Forms/Pages/ConsisTopicSubmit.aspx
- Training topics for future building consistency meetings, Comm (C) & Res (R). Topics in **bold** are approved to count toward CE credit hours; all topics count toward ISO hours.
    - Mar 7 - (C) – Meeting cancelled due to conflict w/ LUESA University for staff
    - **Apr 4 - (C) – Magtech (David Markle, Product Rep for Magtech & Thermocrete)**
    - Apr 5 - (R) – Wall Bracing (Patrick Biddy, Plans Examiner)
    - **May 2 - (C) – Accessibility Q & A (Laurel Wright, NCDOI)**
    - May 3 - (R) – TBD
- NCBIA Winter Code Seminars:
    - Building
        - 3.13.2017 – Wake Co. (Bldg)
        - 3.27.2017 – Hickory
    - Mechanical: 3.28.2017 – Hickory
    - Plumbing: 3.29.2017 – Hickory
    - Electrical: 3.30.2017 – Hickory
- Building code qualification classes at CPCC
    - 2017 Mar 24-26; Apr 8 & 9 – Level II
    - 2017 April 28-30; May 12-14 – Level I
    - 2017 July 21-23; Aug 5 & 6 – Level III
    - 2017 Sep 22-24; Oct 7 & 8 – Level II
    - 2017 Nov 17-19; Dec 1-3 – Level I

Residential Consistency (1 review items, 14 new items) – 2 hrs of Tech ISO

1. Open items or unresolved questions from last meeting:
   a. Can glass be used as a guardrail?
      - Yes. Glass used must meet uniformly distributed live loads for guardrails & in-fill components per Table R301.5.

TABLE R301.5
MINIMUM UNIFORMLY DISTRIBUTED LIVE LOADS
(in pounds per square foot)

USE	LIVE LOAD
Attics without storage[b]	10
Attics with limited storage[b, g]	20
Habitable attics and attics served with fixed stairs	30
Balconies (exterior) and decks[e]	40
Fire escapes	40
Guardrails and handrails[d]	200[h]
Guardrail in-fill components[f]	50[h]

Footnotes:

f. Guard in-fill components (all those except the handrail), balusters and panel fillers shall be designed to withstand a horizontally applied normal load of 50 pounds on an area equal to 1 square foot. This load need not be assumed to act concurrently with any other live load requirement.

h. Glazing used in handrail assemblies and guards shall be designed with a safety factor of 4. The safety factor shall be applied to each of the concentrated loads applied to the top of the rail, and to the load on the in-fill components. These loads shall be determined independent of one another, and loads are assumed not to occur with any other live load.

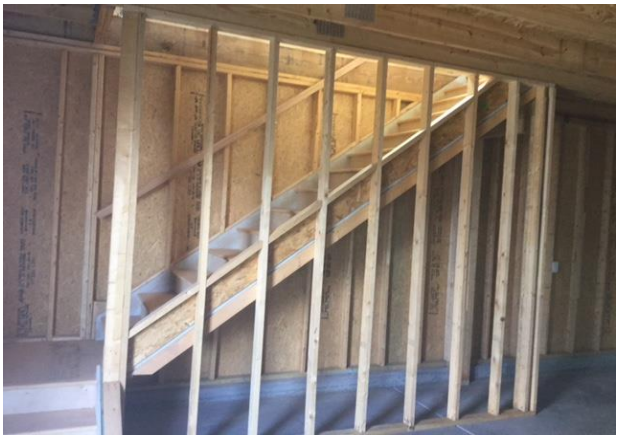
      - The top of glazing panel would have to meet the 200 psf concentrated load if an actual rail element was not present. This may prohibit the sole use of a piece of glazing as the guardrail.
      - Tommy Harmon, Contractor, asked if welded wire screen would be allowed. Jeff Vernon, Bldg Code Administrator said it would require engr'g & testing results to confirm compliance; another option would be if the product had an ICC-ES Report.

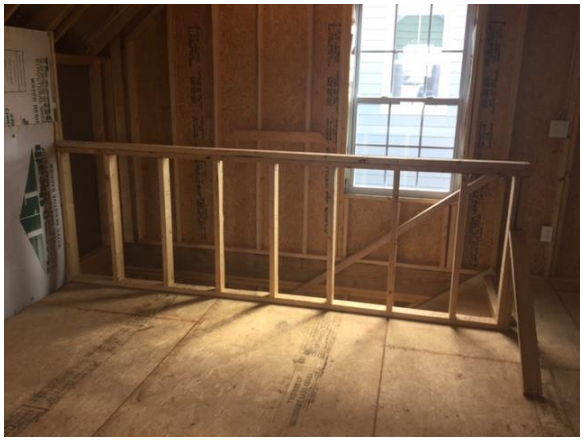
2. Can you provide a letter to prove tempering on glazing that is not etched? (R308.1)
   a. Section R308.1 requires the Manufacturer's designation to be acid etched, sandblasted, ceramic-fired, laser etched, embossed, or other type of permanent application that can't be destroyed; there is NO provision for a letter.
   b. The Manufacturer's designation shall be on each individual piece of glass except for multi-paned assemblies complying with R308.1.1.
      - Multi-paned assemblies are allowed to have only one pane bear the full designation if each pane in the assembly is no more than 1 sq.ft. in area. All other panes have a reduced marking.
   c. Chris Kearns, Contractor, asked about when the designation is cut off if site cutting of the glazing is nec'ry. Jeff Vernon, Bldg Code Administrator, said the designation marking is req'd to be on the glass, so don't cut that part off.

3. When and under what conditions are Inspectors supposed to issue Stop Work Orders (SWO)?
    a. When there is ongoing work underway without permits → SWO.
    b. When a project is permitted, but the Contractor proceeds with work beyond an inspection stage w/o first having the inspection → SWO.
    c. When a project is permitted, but the Contractor performs work that exceeds the scope of the permit → SWO.
    d. For all SWO's, the Inspector shall document specifically & in detail what was seen.
        - Eric Brown, Multi-trade Inspector, asked what specifically should be sent in. Jeff Griffin, Code Enforcement Manager, said photos of the completed SWO and of work in question should be sent to their Manager for upload into the system.
        - Technology upgrades will soon allow Inspectors to upload photos into system directly from their iPad.
    e. An SWO will place a hold on the address until the problem is corrected.
    f. The work stopped by an SWO should be limited to the specific element or trade that is in violation. This could be an entire job or just a portion.
    g. Violation of an SWO can lead to warrants being issued for the Contractor.
    h. The difference between an SWO & an NOV (Notice of Violation) is that an NOV deals with work already completed & not underway, and there is more internal process involved.

4. Are handrails required on exterior site stairs once you get to grade since Residential does not have an exit discharge requirement?
    a. No. Once a person reaches grade from the structure, the Residential Code doesn't regulate beyond that.
    b. A Contractor asked about site ramps, and Jeff Vernon, Bldg Code Administrator, said the issue is the same as site stairs.
    c. An Inspector asked about handrails on steps that are built into retaining walls. Jeff Vernon said yes in the case where the handrails would be part of a req'd guard or where the person had not yet reached finish grade.

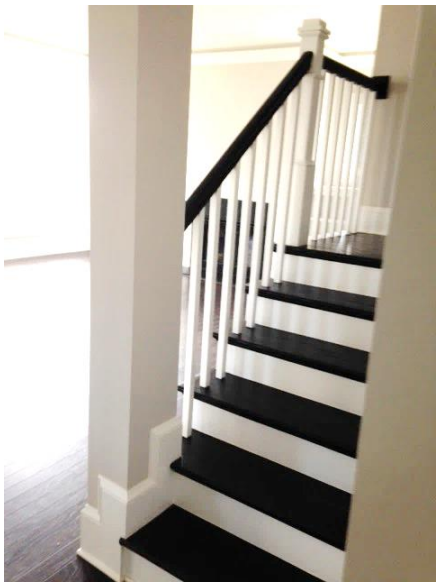
5. What are the guardrail requirements in unfinished garages/basements?
    a. The guardrail req'mts (R312) would be the same as in finished spaces if a fall hazard existed through the open framing along the side of the stair; this would include pickets to provide the req'd opening limitations per R312.3. See pics below of an unfinished garage w/ an unfinished room above:

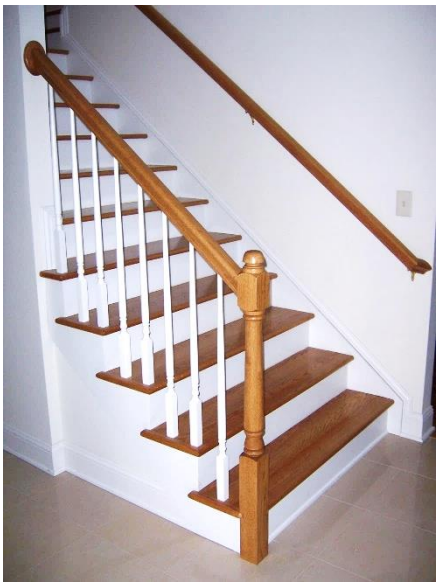




    b. Chris Kearns, Contractor, asked about unfinished attics that are accessed through a full-size door. They will also require a full guardrail w/ opening limitation req'mts met.

6. What is considered a newel post when terminating a handrail?
    a. The example below-left is NOT considered a newel post and it is not approved. To comply with Code, the handrail would have to wrap around the column to extend to the bottom of the stair OR there would have to be a compliant handrail on the opposite side of the stair (not visible in photo).
        - When wrapping handrails around elements in a stairway, always make sure the min req'd width per R311.7.1 is maintained. Also, make sure that the handrail continuity is being maintained per R311.7.7.2.
    b. The example below-right is an actual newel post that is compliant, however, the req'd railing is on the opposite side of the stair.





7. Can we have a wall sconce in a stairway or hallway?
    a. Section R311.7.2 states that **ALL** parts of the stairway shall have a minimum headroom of 6'-8". Sconces projecting from the walls shall be kept out of that area. If the sconce was mounted above the min headroom height, it would be allowed.
    b. A Contractor asked what constitutes a "stairway". Jeff Vernon and Jeff Griffin, Code Enforcement Manager, said a stairway per the Code definition includes all landings at the top & bottom, the run of the steps, and any landings or platforms in between.
    c. Chris Kearns, Contractor, asked about sconces projecting into hallways. Jeff Vernon, Bldg Code Administrator, said ceiling height in hallways is covered in R305.1, but there is no specific language that would speak directly to the projection of a sconce from the wall of the hallway. This will be researched and revisited at the next Res Consistency Meeting.

8. Can spray foam be used as fire-stopping material?
    a. Spray foam cannot be used in rated wall assemblies, however, the determination to allow it as fire-stopping material is driven by the type of rated assembly & what elements of the assembly are providing the rating.
        - For example, the rating in a U336 area separation wall comes from the liner panels and not the framed walls. This assembly allows for spray foam to be present in the wood wall as long as it is kept away from the liner panels. All foam in the wood wall of a U336 assembly has to be a min of 3/4" away from the rated wall as required for combustible construction.

9. Can HVAC equipment encroach into the side yard setback? (Zoning)
    a. This is a Charlotte Zoning issue that MCCE Inspectors have agreed to look for because they are on site much sooner than the Zoning Inspectors and can identify a problem early before it is more expensive to correct.
        - Brandon Burgin, Inspections Supervisor, said the location of the house with respect to setbacks should be inspected & problems caught @ foundation inspection, before framing starts. No HVAC equipment would be in place yet, but conditions that look questionable could be brought to the Contractor's attention for his verification.
    b. The Charlotte ordinance from Petition #2010-078, 12.106(2), (d), 2/21/11 reads: *Heating, ventilation, or air conditioning equipment are considered to be part of a structure and shall not be located in any setback, sight distance triangle, or required buffer or screening. Heating, ventilation, or air conditioning equipment may encroach into the required side yard or rear yard by no more than 50% of the required yard.*
        - Jeff Griffin, Code Enforcement Manager, and Brandon Burgin said most other towns in Mecklenburg County have the same or similar ordinance as Charlotte.
    c. To measure for this req'mt, one starts at the property line & measures into the property. No measurements for this ordinance are made from the face of the structure.
    d. Be advised that the note from Charlotte Zoning that is automatically printed on Bldg Permits, is not 100% accurate. It reads, *"No HVAC units allowed in required side yard setbacks."* This does not factor in the allowance for the 50% encroachment stated in the ordinance.
    e. If MCCE Field Inspectors have questions on a job regarding HVAC equipment encroachment, they should turn down the inspection & direct the Contractor to speak with the Zoning Dept. directly.

10. When can MCCE question information in an Engineer's letter?
    a. MCCE Code Officials are charged to enforce the NC Bldg Codes as Code Enforcement Officers (CEOs). If something is seen that raises questions, the CEO is obligated to ask. This is not a question of the personal integrity or credentials of the Eng'r, but merely an effort to ensure compliance with the governing codes.
    b. Brandon Burgin, Inspections Supervisor, said the driving factor behind this consistency item is a string of Eng'r letters over the last month that granted approval of a specific condition based solely on the Engr's prior knowledge of the Contractor and not any site-specific evaluation of the project.
    c. To be accepted, and Engr's letter shall convey firsthand, site-specific knowledge of the project with a detailed description & solution for the issue or condition being evaluated. MCCE cannot accept any "He's a really good guy" letters.

11. Where is the Link for the new span tables for #2 SYP?
    a. Floor, ceiling, & rafter span tables can be found at the following link: http://www.ncdoi.com/OSFM/Engineering_and_Codes/Documents/2012_NCBuildingCode_amendments/130910%20B3%20RCh5,%20RCh8%20Wood%20Tables%20SP1.pdf
    b. Supplementary info to the Girder & Header span tables for #2 SYP are attached to these minutes.

12. Does a mudsill have to have continuous bearing?
    Yes, unless the opening spanned by the mudsill is also spanned by a double member acting as a girder.

13. Can knee walls be framed on a pier & curtain wall?
    No. Knee walls are load bearing, and per R404.1.5.3 - item 1, shall be framed on a continuous footing or be an engr'd design.

14. What is the bearing for a floor joist on a pier & curtain wall with double band and mudsill?
    The floor joist shall bear on a ledger or approved hanger per R502.6.2. The mudsill on a pier & curtain foundation cannot provide the req'd bearing.

15. Who inspects factory-built fireplaces in Meck County?
    a. MCCE Mechanical Inspectors will inspect everything, including clearances to combustibles, on factory-built fireplaces except for structural & fireblocking elements.
    b. Noted Exception: Isokern fireplaces; please contact the Bldg Inspector for these.

16. Questions / clarifications / comments from the floor: None.

Training Topic – Residential Deck Construction – 2hr of Tech ISO

- Presenter: Jeff Griffin, Code Enforcement Manager for MCCE
- Total in attendance:
  - 8 – MCCE staff
  - 18 – from outside MCCE

INFORMAL CODE INTERPRETATION

NC Department of Insurance
Office of the State Fire Marshal – Engineering Division
1202 Mail Service Center, Raleigh, NC 27699-1202
(919) 661-5880

Supplements to Girder and Header Span Tables for #2 Southern Pine

Code: 2012 Residential Code **Date:** December 19, 2014
Sections: Tables R502.5(1) and R502.5(2)

Question: Can the 2015 *Wood Frame Construction Manual (WFCM)* published by the American Wood Council (formerly AF&PA) be used prescriptively for No. 2 Southern Pine headers?

Answer:
Yes. Although Tables R502.5(1) and R502.5(2) do not prohibit the use of No. 2 Southern Pine for headers and girders as long as they are appropriately sized, the spans shown are inadequate for the new Southern Pine design values, except for No. 1 grade (and higher grade) Southern Pine lumber. These tables can still be used for No. 2 Douglas Fir-Larch, Hem-Fir, and Spruce-Pine-Fir lumber headers and girders. The American Wood Council (AWC) has published the 2015 Wood Frame Construction Manual (WFCM) which contains new tables for southern pine No.2 headers and girders that may be used as alternate materials as addressed by the NC Administrative Code and Policies, Section 105 and are subject to acceptance by the local code enforcement official (CEO). It is the general position of the Department of Insurance, Engineering Division that alternate materials may be accepted without an engineered design when the materials have been properly tested and evaluated and shown to be equivalent to those materials prescriptively included in the technical codes. The Engineering Division can recommend acceptance of the girder and header tables contained within the 2015 WFCM as an acceptable alternate to the prescriptive framing members addressed by the North Carolina Residential Code. Below is a link to those tables which begin on page 260.

http://www.awc.org/pdf/AWC_WFCM-2015_web-viewonly_1411.pdf

In lieu of the tables published in the 2015 Wood Frame Construction Manual, the tables below have been developed by the Department of Insurance and can be used for southern pine No.2 lumber headers and girders.

Keywords:

SUPPLEMENTAL TABLE R502.5 (3) EXTERIOR

GIRDER SPANS AND HEADER SPANS FOR EXTERIOR BEARING WALLS a, b, c, d, e, f

(Maximum spans for southern pine No.2 and required number of jack studs)

Girders and Headers Supporting	Size	Ground Snow Load (psf)																	
		30						50						70					
		Building width (feet)																	
		20		28		36		20		28		36		20		28		36	
		Span	NJ	Span	NJ	Span	NJ	Span	NJ	Span	NJ	Span	NJ	Span	NJ	Span	NJ	Span	NJ
Roof and ceiling	2 - 2 x 4	3 - 3	1	2 - 10	1	2 - 7	1	2 - 9	1	2 - 5	1	2 - 2	1	2 - 6	1	2 - 2	1	1 - 11	1
	2 - 2 x 6	4 - 9	1	4 - 2	1	3 - 9	1	4 - 2	2	3 - 7	1	3 - 3	1	3 - 9	1	3 - 3	1	2 - 11	1
	2 - 2 x 8	5 - 10	1	5 - 2	1	4 - 8	1	5 - 0	2	4 - 5	2	4 - 0	2	4 - 7	2	4 - 0	2	3 - 7	1
	2 - 2 x 10	6 - 6	2	5 - 9	1	5 - 3	1	5 - 9	2	5 - 1	2	4 - 8	2	5 - 2	2	4 - 7	2	4 - 2	2
	2 - 2 x 12	7 - 0	2	6 - 3	2	5 - 10	1	6 - 3	2	5 - 8	2	5 - 2	2	5 - 9	2	5 - 2	2	4 - 9	2
	3 - 2 x 8	7 - 0	1	6 - 2	1	5 - 7	1	6 - 1	2	5 - 5	1	4 - 11	1	5 - 6	2	4 - 11	2	4 - 5	2
	3 - 2 x 10	7 - 8	1	6 - 10	1	6 - 3	1	6 - 9	2	6 - 0	2	5 - 6	1	6 - 2	2	5 - 6	2	5 - 0	2
	3 - 2 x 12	8 - 2	2	7 - 4	1	6 - 9	1	7 - 3	2	6 - 6	2	6 - 1	2	6 - 8	2	6 - 0	2	5 - 7	2
	4 - 2 x 8	7 - 9	1	6 - 11	1	6 - 4	1	6 - 11	1	6 - 1	1	5 - 7	1	6 - 3	2	5 - 6	1	5 - 0	1
	4 - 2 x 10	8 - 6	1	7 - 8	1	7 - 0	1	7 - 7	1	6 - 9	1	6 - 3	1	6 - 11	2	6 - 2	2	5 - 8	1
	4 - 2 x 12	9 - 2	1	8 - 2	1	7 - 6	1	8 - 2	2	7 - 4	1	6 - 9	1	7 - 6	2	6 - 8	2	6 - 2	2
Roof, ceiling and one center bearing floor	2 - 2 x 4	2 - 8	1	2 - 4	1	2 - 2	1	2 - 6	1	2 - 2	1	2 - 0	1	2 - 3	1	2 - 0	1	1 - 10	1
	2 - 2 x 6	4 - 0	2	3 - 6	1	3 - 2	1	3 - 8	1	3 - 3	1	2 - 11	1	3 - 5	1	3 - 0	1	2 - 8	1
	2 - 2 x 8	4 - 11	2	4 - 4	2	3 - 11	1	4 - 6	2	4 - 0	2	3 - 8	1	4 - 2	2	3 - 9	1	3 - 5	1
	2 - 2 x 10	5 - 7	2	5 - 0	2	4 - 7	2	5 - 2	2	4 - 7	2	4 - 3	2	4 - 9	2	4 - 3	2	3 - 11	1
	2 - 2 x 12	6 - 1	3	5 - 6	2	5 - 1	2	5 - 9	2	5 - 2	2	4 - 9	2	5 - 5	2	4 - 10	2	4 - 6	2
	3 - 2 x 8	5 - 11	1	5 - 3	1	4 - 10	1	5 - 6	2	4 - 11	2	4 - 5	2	5 - 2	2	4 - 7	2	4 - 2	2
	3 - 2 x 10	6 - 6	2	5 - 11	1	5 - 5	1	6 - 2	2	5 - 6	2	5 - 1	2	5 - 9	2	5 - 2	2	4 - 9	2
	3 - 2 x 12	7 - 1	2	6 - 5	2	6 - 0	2	6 - 8	2	6 - 0	2	5 - 7	2	6 - 3	2	5 - 8	2	5 - 3	2
	4 - 2 x 8	6 - 8	2	6 - 0	2	5 - 6	1	6 - 3	2	5 - 6	1	5 - 1	1	5 - 9	1	5 - 2	1	4 - 9	1
	4 - 2 x 10	7 - 4	2	6 - 7	2	6 - 1	2	6 - 11	2	6 - 2	2	5 - 8	1	6 - 6	2	5 - 9	1	5 - 4	1
	4 - 2 x 12	7 - 11	2	7 - 1	2	6 - 7	2	7 - 5	2	6 - 8	2	6 - 2	2	7 - 0	2	6 - 3	2	5 - 10	1

a. Spans are given in feet and inches.

b. Spans are based on minimum design properties for No. 2 Grade lumber of southern pine only. For other secies, See Table R502.5(1) in the 2012 NCRC.

c. Building width is measured perpendicular to the ridge. For widths between those shown, spans are permitted to be interpolated.

d. NJ - Number of jack studs required to support each end. Where the number of jack studs equals one, the header is permitted to be supported by an approved framing anchor attached to the full-height wall stud and to the header.

e. Use 30 psf ground snow load for cases in which ground snow load is less than 30 psf and the roof live load is equal to or less than 20 psf.

f. One half of the studs interrupted by a wall opening shall be placed immediately outside the jack studs on each side of the opening as king studs to resist wind loads. King studs shall extend full height from sole plate to top plate of the wall.

SUPPLEMENTAL TABLE R502.5 (3) - cont. EXTERIOR

GIRDER SPANS AND HEADER SPANS FOR EXTERIOR BEARING WALLS a, b, c, d, e, f

(Maximum spans for southern pine No.2 and required number of jack studs)

Girders and Headers Supporting	Size	Ground Snow Load (psf)																	
		30						50						70					
		Building width (feet)																	
		20		28		36		20		28		36		20		28		36	
		Span	NJ	Span	NJ	Span	NJ	Span	NJ	Span	NJ	Span	NJ	Span	NJ	Span	NJ	Span	NJ
Roof, ceiling and one clear span floor	2 - 2 x 4	2 - 5	1	2 - 1	1	1 - 10	1	2 - 3	2	1 - 11	2	1 - 9	2	2 - 2	2	1 - 10	2	1 - 8	2
	2 - 2 x 6	3 - 6	1	3 - 0	1	2 - 9	1	3 - 4	2	2 - 11	2	2 - 7	2	3 - 2	2	2 - 9	2	2 - 6	2
	2 - 2 x 8	4 - 5	2	3 - 10	1	3 - 6	1	4 - 2	3	3 - 7	2	3 - 3	2	3 - 11	2	3 - 5	2	3 - 1	2
	2 - 2 x 10	5 - 1	2	4 - 6	2	4 - 1	2	4 - 9	3	4 - 2	3	3 - 10	2	4 - 6	3	4 - 0	3	3 - 7	2
	2 - 2 x 12	5 - 7	2	5 - 0	2	4 - 7	2	5 - 4	3	4 - 9	3	4 - 4	3	5 - 1	3	4 - 6	3	4 - 1	3
	3 - 2 x 8	5 - 5	2	4 - 9	2	4 - 3	2	5 - 0	2	4 - 5	2	4 - 0	2	4 - 9	2	4 - 2	2	3 - 10	1
	3 - 2 x 10	6 - 0	2	5 - 5	2	4 - 11	2	5 - 9	2	5 - 1	2	4 - 8	2	5 - 5	2	4 - 10	2	4 - 5	2
	3 - 2 x 12	6 - 6	2	5 - 11	2	5 - 5	2	6 - 3	3	5 - 7	2	5 - 2	2	5 - 11	2	5 - 4	2	4 - 11	2
	4 - 2 x 8	6 - 1	2	5 - 5	1	4 - 11	1	5 - 9	2	5 - 0	2	4 - 7	2	5 - 6	2	4 - 9	2	4 - 4	2
	4 - 2 x 10	6 - 9	2	6 - 0	2	5 - 6	1	6 - 5	2	5 - 9	2	5 - 3	2	6 - 1	2	5 - 5	2	5 - 0	2
	4 - 2 x 12	7 - 3	2	6 - 6	2	6 - 0	2	6 - 11	2	6 - 3	2	5 - 9	2	6 - 7	2	5 - 11	2	5 - 6	2
Roof, ceiling and two center bearing floors	2 - 2 x 4	2 - 3	1	1 - 11	1	1 - 9	1	2 - 2	2	1 - 10	2	1 - 8	2	2 - 0	2	1 - 9	2	1 - 7	2
	2 - 2 x 6	3 - 4	1	2 - 11	1	2 - 8	1	3 - 2	2	2 - 9	2	2 - 6	2	3 - 0	2	2 - 8	2	2 - 5	2
	2 - 2 x 8	4 - 2	2	3 - 8	1	3 - 4	1	3 - 11	2	3 - 6	2	3 - 2	2	3 - 9	2	3 - 3	2	3 - 0	2
	2 - 2 x 10	4 - 9	2	4 - 3	2	3 - 11	1	4 - 6	3	4 - 0	3	3 - 8	2	4 - 4	3	3 - 10	2	3 - 6	2
	2 - 2 x 12	5 - 4	2	4 - 10	2	4 - 5	2	5 - 1	3	4 - 7	3	4 - 3	3	4 - 10	3	4 - 4	3	4 - 0	3
	3 - 2 x 8	5 - 1	2	4 - 6	2	4 - 1	2	4 - 10	2	4 - 3	2	3 - 11	1	4 - 8	2	4 - 1	2	3 - 8	1
	3 - 2 x 10	5 - 9	2	5 - 2	2	4 - 9	2	5 - 6	2	4 - 11	2	4 - 6	2	5 - 3	2	4 - 8	2	4 - 3	2
	3 - 2 x 12	6 - 3	2	5 - 8	2	5 - 3	2	6 - 0	3	5 - 5	2	5 - 0	2	5 - 9	2	5 - 2	2	4 - 10	2
	4 - 2 x 8	5 - 9	1	5 - 2	1	4 - 9	1	5 - 6	2	4 - 11	2	4 - 5	2	5 - 3	2	4 - 8	2	4 - 3	2
	4 - 2 x 10	6 - 5	2	5 - 9	1	5 - 4	1	6 - 1	2	5 - 6	2	5 - 1	2	5 - 10	2	5 - 3	2	4 - 10	2
	4 - 2 x 12	6 - 11	2	6 - 3	2	5 - 10	1	6 - 7	2	6 - 0	2	5 - 7	2	6 - 4	2	5 - 9	2	5 - 4	2

a. Spans are given in feet and inches.

b. Spans are based on minimum design properties for No. 2 Grade lumber of southern pine only. For other secies, See Table R502.5(1) in the 2012 NCRC.

c. Building width is measured perpendicular to the ridge. For widths between those shown, spans are permitted to be interpolated.

d. NJ - Number of jack studs required to support each end. Where the number of jack studs equals one, the header is permitted to be supported by an approved framing anchor attached to the full-height wall stud and to the header.

e. Use 30 psf ground snow load for cases in which ground snow load is less than 30 psf and the roof live load is equal to or less than 20 psf.

f. One half of the studs interrupted by a wall opening shall be placed immediately outside the jack studs on each side of the opening as king studs to resist wind loads. King studs shall extend full height from sole plate to top plate of the wall.

SUPPLEMENTAL TABLE R502.5 (3) - cont. EXTERIOR

GIRDER SPANS AND HEADER SPANS FOR EXTERIOR BEARING WALLS a, b, c, d, e, f

(Maximum spans for southern pine No.2 and required number of jack studs)

Girders and Headers Supporting	Size	Ground Snow Load (psf)																	
		30						50						70					
		Building width (feet)																	
		20		28		36		20		28		36		20		28		36	
		Span	NJ	Span	NJ	Span	NJ	Span	NJ	Span	NJ	Span	NJ	Span	NJ	Span	NJ	Span	NJ
Roof, ceiling and two clear span floors	2 - 2 x 4	1 - 10	2	1 - 6	2	1 - 4	2	1 - 10	2	1 - 6	2	1 - 4	2	1 - 9	2	1 - 6	2	1 - 4	2
	2 - 2 x 6	2 - 9	2	2 - 4	2	2 - 1	2	2 - 9	2	2 - 4	2	2 - 1	2	2 - 8	2	2 - 3	2	2 - 1	2
	2 - 2 x 8	3 - 5	2	3 - 0	2	2 - 8	2	3 - 5	2	3 - 0	2	2 - 8	2	3 - 4	2	2 - 11	2	2 - 7	2
	2 - 2 x 10	4 - 0	3	3 - 6	2	3 - 2	2	4 - 0	3	3 - 6	2	3 - 2	2	3 - 11	2	3 - 5	2	3 - 1	2
	2 - 2 x 12	4 - 7	3	4 - 0	3	3 - 8	2	4 - 6	3	4 - 0	3	3 - 8	2	4 - 5	4	3 - 10	2	3 - 6	2
	3 - 2 x 8	4 - 3	2	3 - 8	1	3 - 4	1	4 - 3	2	3 - 8	1	3 - 4	1	4 - 2	3	3 - 7	2	3 - 3	2
	3 - 2 x 10	4 - 11	2	4 - 3	2	3 - 10	1	4 - 11	2	4 - 3	2	3 - 10	1	4 - 9	3	4 - 2	3	3 - 9	2
	3 - 2 x 12	5 - 6	2	4 - 11	2	4 - 5	2	5 - 5	2	4 - 10	2	4 - 5	2	5 - 3	3	4 - 8	3	4 - 3	3
	4 - 2 x 8	4 - 11	2	4 - 3	2	3 - 10	1	4 - 10	2	4 - 3	2	3 - 10	1	4 - 8	2	4 - 1	2	3 - 9	1
	4 - 2 x 10	5 - 7	2	4 - 11	2	4 - 5	2	5 - 6	2	4 - 11	2	4 - 5	2	5 - 4	2	4 - 9	2	4 - 3	2
	4 - 2 x 12	6 - 2	3	5 - 6	2	5 - 0	2	6 - 0	3	5 - 5	2	5 - 0	2	5 - 10	2	5 - 3	2	4 - 10	2

a. Spans are given in feet and inches.

b. Spans are based on minimum design properties for No. 2 Grade lumber of southern pine only. For other secies, See Table R502.5(1) in the 2012 NCRC.

c. Building width is measured perpendicular to the ridge. For widths between those shown, spans are permitted to be interpolated.

d. NJ - Number of jack studs required to support each end. Where the number of jack studs equals one, the header is permitted to be supported by an approved framing anchor attached to the full-height wall stud and to the header.

e. Use 30 psf ground snow load for cases in which ground snow load is less than 30 psf and the roof live load is equal to or less than 20 psf.

f. One half of the studs interrupted by a wall opening shall be placed immediately outside the jack studs on each side of the opening as king studs to resist wind loads. King studs shall extend full height from sole plate to top plate of the wall.

SUPPLEMENTAL TABLE R502.5 (4) INTERIOR

GIRDER SPANS AND HEADER SPANS FOR INTERIOR BEARING WALLS a, b, c, d, e

(Maximum spans for southern pine No.2 and required number of jack studs)

Girders and Headers Supporting	Size	Building width (feet)					
		20		28		36	
		Span	NJ	Span	NJ	Span	NJ
One floor only 	2 - 2 x 4	3 - 2	1	2 - 8	1	2 - 4	1
	2 - 2 x 6	4 - 9	1	3 - 11	1	3 - 5	1
	2 - 2 x 8	5 - 9	1	4 - 10	1	4 - 4	1
	2 - 2 x 10	6 - 7	1	5 - 8	1	5 - 0	1
	2 - 2 x 12	7 - 2	1	6 - 3	2	5 - 7	1
	3 - 2 x 8	7 - 0	1	5 - 11	1	5 - 3	1
	3 - 2 x 10	7 - 9	1	6 - 8	1	6 - 0	1
	3 - 2 x 12	8 - 5	1	7 - 3	1	6 - 7	1
	4 - 2 x 8	7 - 11	1	6 - 9	1	6 - 0	1
	4 - 2 x 10	8 - 8	1	7 - 6	1	6 - 9	1
	4 - 2 x 12	9 - 4	1	8 - 2	1	7 - 4	1
Two floors 	2 - 2 x 4	2 - 1	1	1 - 9	2	1 - 7	2
	2 - 2 x 6	3 - 2	1	2 - 8	2	2 - 5	2
	2 - 2 x 8	3 - 11	1	3 - 4	2	3 - 0	2
	2 - 2 x 10	4 - 7	2	3 - 11	2	3 - 6	2
	2 - 2 x 12	5 - 2	2	4 - 6	3	4 - 1	3
	3 - 2 x 8	4 - 10	1	4 - 2	2	3 - 9	1
	3 - 2 x 10	5 - 6	1	4 - 9	2	4 - 4	2
	3 - 2 x 12	6 - 2	2	5 - 5	2	4 - 11	2
	4 - 2 x 8	5 - 6	1	4 - 9	2	4 - 3	2
	4 - 2 x 10	6 - 3	2	5 - 5	2	4 - 11	2
	4 - 2 x 12	6 - 10	2	6 - 0	2	5 - 6	2

a. Spans are given in feet and inches.

b. Spans are based on minimum design properties for No. 2 Grade lumber of southern pine only. For other secies, See Table R502.5(2) in the 2012 NCRC.

c. Building width is measured perpendicular to the ridge. For widths between those shown, spans are permitted to be interpolated.

d. NJ - Number of jack studs required to support each end. Where the number of jack studs equals one, the header is permitted to be supported by an approved framing anchor attached to the full-height wall stud and to the header.

e. One half of the studs interrupted by a wall opening shall be placed immediately outside the jack studs on each side of the opening as king studs to resist wind loads. King studs shall extend full height from sole plate to top plate of the wall.